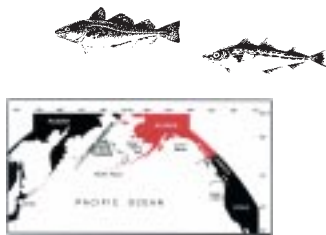


Integrating Ecosystem Considerations into Groundfish Fisheries Management off Alaska, USA

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ABSTRACT

Ecosystem considerations factor into the management of groundfish fisheries in the North Pacific Ocean off Alaska, USA. The Council has been developing an ecosystem-based management approach that involves public participation, reliance on scientific research and advice, conservative catch quotas, comprehensive monitoring and enforcement, bycatch controls, gear restrictions, temporal and spatial distribution of fisheries, habitat conservation areas, and other biological and socioeconomic considerations. The most basic ecosystem consideration employed is a precautionary approach to extraction of fish resources. Off Alaska, all groundfish stocks are considered healthy, while providing sustained yields of about two million metric tons annually. Management measures are also taken to minimize potential impacts of fishing on sea floor habitat and other ecosystem components such as marine mammals and seabirds. This poster reviews the primary principles of the Council's ecosystem approach.



Maintain Healthy Groundfish Stocks

A precautionary approach to extraction of fishery resources is the most basic and essential component of an ecosystem-based fishery management approach. For the last 20 years, conservative catch limits have been established for groundfish fisheries off Alaska. As a result, all stocks are considered healthy while providing sustained yields of about 2,000,000 mt annually.

Scientifically-based, peer reviewed stock assessments:

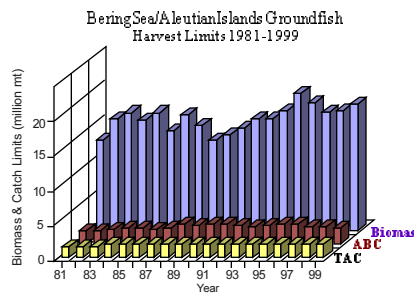
- systematic trawl, hydroacoustic, and longline surveys
- comprehensive observer monitoring and fishery data

Conservative harvest rates:

- $F_{ABC} \leq F_{40\%}$ for most stocks
- harvest rates adjusted downward if stock below B_{MSY} or $B_{20\%}$
- precautionary in the face of data uncertainty or ecosystem impacts

Catch limited to TACs (annual quotas) specified preseason:

- for each stock, TAC always $\leq ABC$ (biologically sustainable quota)
- bycatch and discards counted against the TACs
- sum of all TACs ≤ 2 million mt in Bering Sea and Aleutian Is. area



Minimize Interactions with Marine Mammals and Seabirds

Measures have been implemented to reduce competition, disturbance and mortality of seabirds and marine mammals. In particular, most of these measures were adopted specifically to protect endangered Steller sea lions and Short-tailed albatross, but they affect many other species as well.

Measures to reduce competition for prey:

- pollock and mackerel TACs seasonally and spatially apportioned
- fishing prohibited for capelin, sand lance, myctophids, etc.
- 10 and 20 mile no-trawl zones around sea lion rookeries/haulouts

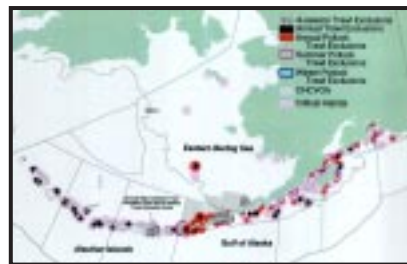
Measures to reduce disturbance:

- 3 mile no entry zones around sea lion rookeries
- 12 mile no entry zones around walrus haulouts

Measures to reduce direct mortality:

- incidental catch limits specified for sea lions and albatross
- seabird deterrent devices/activities required on longline vessels
- use of gillnets prohibited for groundfish

Trawl Exclusion Zones Around Sea Lion Rookeries/Haulouts



Protect and Maintain Fish Habitat

Adequate habitat is essential for maintaining productivity of fishery resources. Some species or life stages require particular habitats for food, reproduction, and shelter from predators.

Essential Fish Habitat

- identified and mapped based on general fish distribution
- useful for understanding potential threats from proposed activities

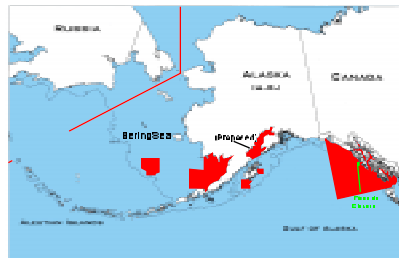
Habitat Areas of Particular Concern

- identified based on ecological function and vulnerability to impacts
- examples include living substrates such as corals, kelp, & eelgrass
- useful for evaluating potential threats due to fishing activities

Marine Protected Areas

- about 80,000 square miles closed to fishing with trawl gear
- about the same amount of area closed to scallop dredges
- all groundfish fishing is prohibited on one productive pinnacle

Year-Round Bottom Trawl Closure Areas



Limit Bycatch, Discard, and Waste of Fish Resources

Measures have been adopted primarily to address social and economic concerns, but there are also ecosystem concerns. Mortality of unwanted or prohibited species may reduce spawning potential, reduce biodiversity, increase nutrient cycling, and add uncertainty to estimates of total removals.

Bycatch limits:

- bycatch of some species limited (halibut, crab, salmon, herring)

Voluntary measures:

- industry sharing bycatch data to avoid hotspot areas

Gear restrictions:

- only pelagic trawls allowed in Bering Sea pollock fishery
- biodegradable panels required in groundfish and crab pots
- many gear types are prohibited (e.g., gillnets)

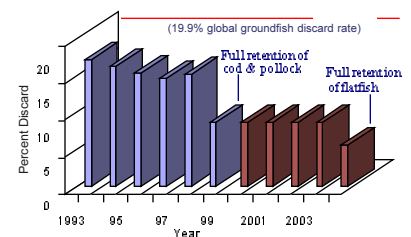
Allocations:

- Majority of cod and sablefish TACs allocated to fixed gear fisheries
- Halibut & sablefish IFQ program allows selective fishing practices

Full retention:

- all pollock and cod must be retained once caught
- full retention soon required for some rockfish and flatfish species

Discard Rates of Alaska Groundfish



Continue to Develop Ecosystem-Based Fishery Management

The Council continues to develop successful ecosystem-based management of marine fisheries. Several components have played a key role in this development.

The Council's Ecosystem Committee

- serves as forum for education on ecosystem topics
- provides recommendations and advice to Council on policy
- provides feedback to scientists regarding research needs

Ecosystems Considerations document

- prepared annually by scientists as part of Stock Assessment report
- contains a list of ecosystem concerns, updates on ecosystem literature reviews, habitat and gear research, oceanographic changes, status of mammals and seabirds, and observations from coastal people and fishermen.

National and local interest in ecosystem-based management

- new national policy (e.g., Sustainable Fisheries Act)
- new scientific reports by National Research Council and others
- environmental groups focusing on marine ecosystems and fisheries

The Next Steps

- Develop fishery ecosystem plans as recommended by the national Ecosystem Principles Advisory Panel.
- Refine Ecosystem Committee's Internet web site to include reports, links, and bulletin board (www.fakr.noaa.gov/npfmc).
- Evaluate how current policies comport with National Research Council's recommendations for sustainable fisheries.
- Consider additional measures to protect habitat areas of particular concern.
- Expand the Ecosystems Consideration Chapter with standardized ecosystem status and trend indicators.

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